PREFACE

This manual was created for the purpose of improving the efficiency and accuracy of our plan production process and to assist new staff in the area of personal development. Every project team member will be given access to the manual. This document is a 'work-in-progress', continually being refined. It will be the *sole responsibility* of each individual to review the manual and assure they are aware of the most current information. All forms or checklists associated with this manual are shown in the Appendices and are located on the server under each project directory and on the internet. Any updates will be placed on the server and the internet and it is the individual's responsibility to keep their manual current. This manual was put together by the Design/Construction QA/QC committee. The committee consists of

Kent Evans, QA/QC Manager
Craig Aldridge
Jerry Ball
Wayne Burcham
Gary Divis
Erika Nunes
Mike Otte
Curt Weber

Anyone who feels that a change or revision to the manual is warranted is encouraged to bring the issue up for discussion to the QA/QC committee and a determination will be made as to the inclusion of said material.

INTRODUCTION

Checklists and other guidelines will be outlined to not only ensure a sound product but will assist in personal development of staff. Everyone assigned to a project team will be expected to perform certain tasks on that project and will be responsible for fulfilling their responsibilities accurately and efficiently. Asking questions, training and back-checking all work before it is reviewed by the Project Manager is all part of Quality Control (QC).

Following the procedures, guidelines, and checklists in this manual will help to ensure Quality Assurance (QA) at designated milestones. Although plans which are reviewed by the Project Manager are reasonably accurate and complete, utilizing the policies and guidelines included in this manual will assure a more orderly, comprehensive and accurate plan set. Due to numerous circumstances, maintaining consistency from job to job is a major task. It is everyone's responsibility to follow the procedures herein and therefore be able to explain why he or she chooses otherwise. Only by strictly adhering to the QA/QC guidelines and standards can we continue to improve the quality of our services to the community.

TECHNICAL RESPONSIBILITIES

Producing a clear and accurate set of plans is only half of our commitment to QA/QC. To fulfill the commitment, QA/QC also needs to be carried out in electronic files and documents. Following CADD Standards includes, but is not limited to items such as:

- Making sure the correct text size and font are used in the Microstation files,
- Entities are drawn correctly to comply with the use of Geopak,
- Design features are drawn on the appropriate levels, and
- Completion of summary of quantities sheets.

Following these standards will also improve the quality of plans and their readability when reproduced from records.

Beyond the traditional responsibilities of each team member, there are a number of tasks and duties that every individual should be expected to perform. Typical day to day tasks beyond data management may include, record keeping, correspondence management, quality control and enforcement, personal development and interaction with public and private agencies including other Public Works and Utilities departments, private utility companies and consultants. Although this manual may not be all inclusive, it is intended to enhance each individual's overall capabilities.

PLAN REVIEW

Quality Control (QC) is vital to the success of the Engineering Services team. Each member of the project team needs to understand their role and expected duties and display the initiative to stay committed to providing a product that is consistent and accurate. Our goal as a team is to attain perfection in our plan sets. We can achieve this goal by learning from our previous experiences through documentation. The documentation will be attained through a formal review process (outlined below) that will utilize plan checklists for reviewing our plans prior to any submittal.

These checklists are available for each type of plan sheet (i.e. plan/profile, construction/removal, drainage, etc.) and give guidance on what should be completed at each submittal. The checklists are shown in Appendix A. The refinement of these checklists will be an on-going process, as common errors committed on projects will be incorporated into the checklists. The checklists are available on the server in the specified project folder and on the internet.

Quality Assurance (QA) reviews by a QA/QC review team will be a part of every in-house project. Consultants are required in their scope of services to conduct their own QA/QC review prior to each submittal. A project schedule will be developed for every project by the Project Manager and distributed to every person on the project team. This schedule will include the major submittal dates and the QA/QC review dates. These reviews will typically take place just before the:

- 1st Submittal
- 2nd Submittal
- Draft PS & E Submittal
- PS & E Submittal

Typically, these reviews will be scheduled two weeks prior to a major submittal date. This will allow for up to one week for review and discussion and one week for redlines to be corrected and the plans plotted for submittal. The Project Manager will be responsible for enforcing the timelines to assure that the quality reviews take place.

Quality Assurance (QA) Review Process:

- A project team (any Designers and Project Managers) and a QA review team (a three person panel assigned by the QA/QC Manager) will be assigned at the start of a new project.
- The Designer will submit plans to the QA review team two weeks prior to the major submittal dates.
- The QA review team will use the appropriate checklists to document (redline) all comments, questions and errors caught during the review.
- After the initial review, the QA/QC review team and the project team will meet to discuss the review comments.
- The Designers will then have one week to make any necessary corrections prior to submitting the plans to the Project Manager for the PW&U Plan Review Group review.
- The documentation of the review will then be filed in the project file and also in a separate file that will contain checklists from all of the in-house QA/QC project reviews. This file will be evaluated periodically by the QA/QC committee and a list will be formed that documents common errors committed by the project teams.

To re-enforce Engineering Services' commitment to QA/QC, everyone is responsible for back-checking his/her work before it is given to the PM for their review. Design team members will use the checklists provided on the server as a reference tool when working on projects. The appropriate checklists must be filled out by the Designers and included with each submittal as well as the redlined plans from the previous submittal. This will help those on the PW & U Plan Review Group to know what they should be looking for and what may not be included yet.

Once a project has been submitted to the Project Manager, the Project Manager will then send a To-Do to the PW&U Plan Review Group to notify them that the plans, checklists, cost estimate and any special provisions are available for review. The To-Do should include the following information:

- Name of Project
- Project Number
- Project Description
- What Submittal it is
- Deadline for Reviews
- Key Components of the Project

Each person on the Plan Review Group will be responsible for responding to the To-Do to indicate they know the plans are available for review. If it is not appropriate for an individual to review a particular set of plans, it is the individual's responsibility to decline the To-Do. If it is appropriate for the individual to review the plans, then they should accept the To-Do and mark the To-Do completed when they have finished their review. If a Reviewer accepts a To-Do and then finds they are unable to complete it, they should change their response to decline rather than sending a notice that they have completed the review.

A "Plan Review Checkout Sheet" should also be filled out by the Project Manager and posted directly above where the plans are located on the review shelf. The "Plan Review Checkout Sheet" is shown in Appendix B. Each Reviewer is responsible for initialing and dating the checkout sheet when they begin their review and when they have finished their review. The "Plan Review Checklists" should be used as a guide when reviewing plans to inform the Reviewer of what is expected at each submittal. When the review period is over, the Project Manager will compile all comments using the "Plan Review Summary Sheet", found in Appendix C. A meeting will then be held with the Designers or Consultant to discuss the comments from the review. The Designers or Consultant will then have one week to complete the "Response" section of the "Plan Review Summary Sheet" with how they plan to address the comment and return it to the Project Manager. If either party disagrees on how to address the comment, then the Project Manager needs to discuss the issue with the appropriate City personnel, including the person who made the comment, to resolve the issue. The Project Manager will then be responsible for noting the "Final Action" taken and returning a copy of the summary sheet to the Designers or Consultant. A copy of the completed summary sheet should be included in the next submittal to enable Reviewers to see how their comments were addressed.

REDLINE PROCESS

One way to ensure a quality set of plans is to double check that all changes or corrections have been addressed. As previously mentioned, every project has several "milestones"; a First, Second, Draft PS & E, and PS & E submittal. Due to changes in design policy, unforeseen complications, internal or external influences, projects are constantly being changed and updated. The job of the Reviewer is to provide constructive feedback to help the Designer achieve the City's goal of providing quality plans. If an error is found or if the Reviewer has a design question, they should make a detailed comment so that their concern is clear to the Designer. All comments should be made in ink and initialed so that the Designer knows who to talk to if further discussion is needed. When a Reviewer has completed their review, they need to initial and date the check out sheet. Making sure these changes are made and knowing which sheets will need to be revised is critical to putting out an error free product.

Once a redline has been corrected, it should be crossed off with a highlighter to help verify that all redlines have been addressed. If the Designer has a question about any revision, they need to follow up by asking the Project Manager for clarification before that comment is crossed off. Even after making sure that you have completed all redlines by "highlighting" them off, it is the responsibility of that individual to back check their work. This is to be done before taking it to the Project Manager for their review. Only by following these guidelines can we assure that all revisions are accurate and have been performed in an efficient manner to protect against any potential oversights.

Appendix A

PLAN REVIEW CHECKLISTS

CITY OF LINCOLN
NEBRASKA

PLAN REVIEW CHECKLIST **EXAMPLE**	CROSS SECTIONS SHEET SUBMITTAL: / DATE:

PROJECT NAME:	DESIGN FIRM / DESIGNER:
	DESIGN MANAGER:
PROJECT NUMBER: / CITY PROJECT MANAGER:	QA/QC REVIEWER:

WORK COMPLETED

FIRST SUBMITTAL TASKS	YES	NO	ON GOING	NA	SUBMITTER OR DESIGNER COMMENTS
File name and plotting information					
Drawing number					
Sheet name in lower right corner					
City of Lincoln sheet border					
Title Block filled out					
Round "Preliminary Plan - Not Final - Subject to Change" stamp					
Shown at 25-foot intervals and at locations as necessary to accurately depict the lay of the land, analyze drainage, show driveway grades and compute earthwork quantities					
Stations shown					
Street name labeled					
Cut/Fill/Overexcavation areas shown					
Hinge point/catch point data shown					
Existing ground elevation shown					
Proposed ground elevation shown					
Existing ground line shown					
Proposed ground surfacing shown					
Existing Right-of-Way line and easements shown					
Existing Utilities shown					
SECOND SUBMITTAL TASKS					
Update and check all tasks under First Submittal					
Round "Preliminary Plan - Not Final - Subject to Change" stamp					
Proposed Right-of-Way line and easements shown					
Proposed Utilities shown					
Pertinent Geotechnical info shown					
DRAFT PS&E SUBMITTAL TASKS					
Update and check all tasks under Second Submittal					
Preliminary stamp replaced by Professional Engineer's Seal					
PS&E SUBMITTAL TASKS					
Update and check all tasks under Draft PS&E Submittal					
Professional Engineer's Seal has been Signed and Dated					

Appendix B

PLAN REVIEW CHECKOUT SHEET

CITY OF LINCOLN
NEBRASKA

PLAN REVIEW
CHECK OUT SHEET
EXAMPLE

REVIEW DATES:
Begin:[Begin Date] End:[End Date]

SUBMITTAL:
[Select Submittal]

DATE RECEIVED:
[Date Received]

PROJECT NAME:
[Project Name]

PROJECT NUMBER:
[Project #]

PROJECT MANAGER:
[Select Project Mngr]

PROJECT DESCRIPTION:

☐Grading ☐Storm Drainage ☐Wastewater
☐Water ☐Paving ☐Lighting
☐Traffic Signals ☐Landscaping ☐Markings
☐Signing ☐Erosion Control ☐Misc:

	Check Out DATE / INITIALS	Check In DATE / INITIALS		Check Out DATE / INITIALS	Check In DATE / INITIALS
Management			**Survey**		
Figard, Roger A	/	/	Bartek, Rick W	/	/
Hoskins, Randy W	/	/	Edson, Ron G	/	/
Shafer, Thomas S	/	/	**Traffic Operations**		
Design / Construction			Bartels, Dennis D	/	/
Aldridge, Craig E	/	/	Bernt, Dave G	/	/
Burcham, Wayne L	/	/	Blahak, Chad E	/	/
Ball, Jerry L	/	/	Huff, Jim D	/	/
Dittmann, Brian K	/	/	Jochum, Larry L	/	/
Divis, Gary J	/	/	Kroos, Harry B	/	/
Duensing, Larry G	/	/	Lee, Al K	/	/
Evans, Kent E	/	/	Opfer, Scott A	/	/
Faust, Steven R	/	/	Powell, Doug W	/	/
Humphrey, Kristen A	/	/	Rathjen, Dave E	/	/
Lionberger, Holly	/	/	Sieckmeyer, Kelly K	/	/
Nunes, Erika L	/	/	Singh, Virendra A	/	/
Otte, Michael S	/	/	Sokolik, Erin E	/	/
Sweney, Bruce W	/	/	Tompsett, Jim L	/	/
Weber, Curt A	/	/	**Wastewater**		
Wilcox, Charles D	/	/	Kramer, Brian A	/	/
Wondercheck, Warren	/	/	Mandery, Michael A	/	/
Lab			**Water**		
Hassler, Dan P	/	/	McElvain, Nick W	/	/
Maintenance			Owen, Steve R	/	/
Nass, Bill L	/	/	**Watershed Management**		
Planning			Biesecker, Devin L	/	/
Cary, David R	/	/	Callen, John	/	/
Records	/	/			
Pratt, Tim H	/	/			
Titus, Steve J	/	/			

Appendix C

PLAN REVIEW SUMMARY SHEET

CITY OF LINCOLN
NEBRASKA

PLAN REVIEW SUMMARY SHEET

EXAMPLE

CODES:
- A. ACCEPT COMMENT – WILL BE CORRECTED, ADDED, OR CLARIFIED
- B. DESIGNER WILL EVALUATE
- C. DELETE COMMENT (MUST PROVIDE JUSTIFICATION)

SUBMITTAL: [Select Submittal]

DATE: [Date Received]

PROJECT NAME:
[Project Name]

PROJECT DESCRIPTION:
☐Grading ☐Storm Drainage ☐Waste Water
☐Water ☐Paving ☐Lighting
☐Traffic Signals ☐Landscaping ☐Markings
☐Signing ☐Erosion Control ☐Misc:

PROJECT NUMBER: [Project #]

CITY PROJECT MANAGER: [Select Project Mngr]

DESIGN FIRM: [Engineering Services]

DESIGN MANAGER/DESIGNER: [Design Manager]

ITEM NO.	SHEET NO. / CODE	CONCERN	FINAL ACTION
1	[Code]	COMMENT: RESPONSE:	
2	[Code]	COMMENT: RESPONSE:	
3	[Code]	COMMENT: RESPONSE:	
4	[Code]	COMMENT: RESPONSE:	
5	[Code]	COMMENT: RESPONSE:	

6		COMMENT: RESPONSE:	
	[Code]		